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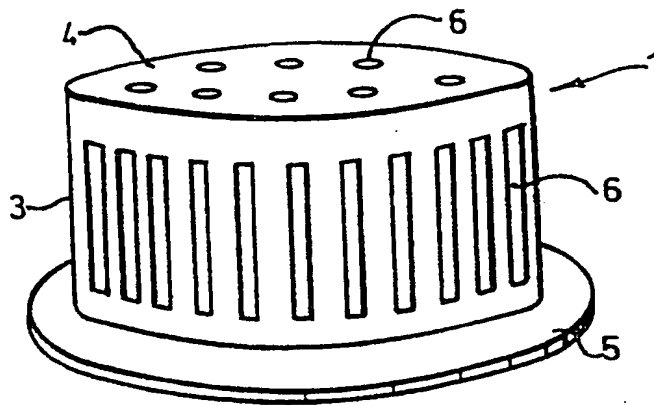
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(54) Title: VENTILATED COVERS FOR ELECTRICAL FITTINGS

(57) Abstract

A fire resistant cover for a ceiling mounted electrical light fitting (10), comprises a metallic and/or ceramic hood (1) having one or more upstanding sides (3) and a top (4). The hood (1) is coated or lined or partially coated or lined on one or more of its internal surfaces with a liquid based or solid intumescent material and the internal dimensions of the hood (1) are such that the hood can be positioned over and around a light fitting (10) with the light spaced from the internal walls of the hood (1). The hood may be produced from wire mesh (7).



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## VENTILATED COVERS FOR ELECTRICAL FITTINGS

This invention relates to ventilated covers for electrical fittings and more especially, but not exclusively, to a ventilated cover for a recessed electrical fitting, such as a downlighter set in a ceiling space, which, in the event of a fire, isolates the fitting from the structure in which it is recessed to maintain the fire resistance thereof.

Light fittings recessed into ceilings are well known. Such light fittings are known as downlighters. The heat generated by such light fittings can be considerable and represents a fire hazard. Also the recess in which such a fitting is mounted can itself provide a path for fire and smoke to a room or area located above that ceiling.

Fire proofed ducts for electrical cabling are disclosed by US-PS-4276332 and GB-PS-2034535. These are not suitable for downlighter fittings.

British Patent Application 2297609A is directed to a ventilated cover for a downlighter. This cover is fire and smoke resistant and is designed to be recessed into a supporting structure. The cover comprises a fabric hood coated or impregnated with a liquid based intumescent material and includes a top supported by one or more upstanding side walls and a plurality of fabric pieces which extend inwardly from the lower margin of the or each side wall. The top of the cover includes a layer of intumescent material which is formed with a plurality of apertures through at least one of which electrical wiring to the fitting can pass. Complementary apertures are formed in the top of the cover, and means are provided for connecting the

inwardly extending material pieces to adjoining surfaces of the structure in which the electrical fitting is recessed.

This cover is especially useful when providing fire and smoke protection to an existing light fitting where access to the fitting is through the ceiling in which the fitting is positioned.

The present invention sets out to provide an alternative ventilated cover for an electrical fitting to which access from above is available, for example where flooring has yet to be laid. Covers in accordance with this invention are relatively inexpensive and provide good protection in the event of a fire.

According to the present invention in one aspect there is provided a fire resistant cover for a ceiling mounted electrical light fitting, the cover comprising a metallic and/or ceramic hood comprising one or more upstanding sides and a top, the hood being coated or lined or partially coated or lined on one or more of its internal surfaces with a liquid based or solid intumescent material, the internal dimensions of the hood being such that the hood can be positioned over and around a light fitting with the light spaced from the internal walls of the hood, and the sides and/or top of the hood being formed with a plurality of ventilation openings.

The top and/or side(s) of the hood may be formed with one or more apertures through which electrical wiring or the like can pass.

The cover may be generally circular or square or rectangular in cross-section. Other cover shapes could however be employed.

In another aspect, the invention provides a fire resistant metallic or ceramic cover for a downlighter to be recessed into a suspended ceiling, the cover being coated and/or lined internally at least partially with a liquid based

or solid intumescent material and including at least one ventilation aperture through which can pass cabling for connection to the downlighter or a fitting of the downlighter.

The side(s) and/or top of the hood may be formed with a plurality of ventilation openings, the openings in the side(s) preferably taking the form of upstanding slots. Alternatively, the hood sides and/or top may be produced from a wire mesh. The internal surface(s) of the side(s) may be lined with one or more pieces of wire mesh or perforated sheet, the exposed surface of the or each piece of mesh or sheet being coated with liquid based intumescent or lined with material impregnated with intumescent. The intumescent may comprise graphite granules.

In a further aspect, the invention provides a fire resistant cover for an electrical fitting to be recessed into a supporting structure, the cover comprising a metallic or ceramic hood coated or lined on one or more of its internal surfaces (or parts of such surfaces) with a liquid based or solid intumescent material and including a top supported by one or more upstanding side walls and a lower radially extending lip for connection to adjoining surfaces of the structure in which the electrical fitting to be covered is located, the top and/or side(s) of the hood being formed with one or more ventilation apertures and through which electrical wiring of the like can pass.

The invention will now be described by way of example only with reference to the accompanying diagrammatic drawings in which:-

Figure 1 is a perspective view of a cover in accordance with the invention;

Figure 2 is a plan view from below of the cover shown in Figure 1;

Figure 3 is a perspective view of an alternative cover in accordance with the invention;

Figures 4 and 5 schematically illustrate two different types of fixings for securing a cover to an adjoining ceiling structure;

Figures 6 and 7 are respectively a perspective view and a plan view from above of an alternative downlighter cover in accordance with the invention; and

Figure 8 is a side view in section of a still further cover in accordance with the invention.

The cover illustrated in Figures 1 and 2 is produced from metal or a ceramic and comprises a hood, which is either coated internally with an intumescent paint or internally lined with one or more of fabric pieces 2 impregnated with an intumescent, e.g. graphite or carbon granules. The hood 1 is generally circular in cross-section and comprises an upstanding side wall 3, a top 4 and an outwardly extending radial lip 5. The intumescent coating or lining may be applied to the top 4 or the side wall 3, or both the top and the side wall. A series of ventilation openings 6 are formed in the side walls and/or the top, one or more of these being large enough to enable cabling or a part of a light fitting to pass through.

The ventilation openings formed in the side wall 3 comprise a plurality of spaced upstanding slots and the openings formed in the top 4 comprise a plurality of spaced holes. The number and shape of these openings may vary, their purpose essentially being to ventilate the hood interior and allow heat to flow outwardly from the hood. Also, the shape of the hood may vary. It may, for example, be of square, rectangular or other shape. The height and diameter of the hood must be sufficient to contain the light fitting without causing overheating of the same, and the hood material provides a

free standing, rigid construction. Hence the choice of metal (e.g. aluminium or steel) or ceramic.

In the embodiment illustrated in Figure 3, the internal wall of the cover is lined with a wire mesh or a perforated metallic sheet 7. The perforations of the mesh or sheet are typically  $\frac{1}{4}$ " in diameter. The mesh or sheet 7 is coated with a liquid intumescent or lined with fabric pieces of material impregnated with an intumescent material. The mesh or sheet 7 lends rigidity to the hood while providing effective ventilation for the hood interior.

Two types of fixings are shown in Figures 4 and 5. In the Figure 4 embodiment, strips cut from the side wall 3 are bent down to define clips 8 which locate over the margins of a hole formed in a ceiling to receive a light fitting. In the arrangement shown in Figure 5, the lip 5 of the hood is screwed to the adjoining structure. Alternatively, a fire proof sealant may be used.

In use, the heat generated by downlighters recessed into ceilings can represent fire hazards. In the event of such a fire, the intumescent coating or lining of the cover quickly expands to isolate the fitting entirely from the surrounding structure thereby confining the fire and any resulting smoke, and maintaining the fire resistance of the structure.

Turning now to the downlighter cover illustrated in Figures 6 and 7 (in which like integers have been given the same reference numerals), this cover is similar to those illustrated in Figures 1 to 3 excepting that no radial lip 5 is provided. The hood 1 is produced from metal or ceramic and includes in its side wall 3 and top 4 openings for ventilating the hood interior and through which cabling can pass. The side wall and/or hood is lined (or partially lined) with a solid lining of intumescent material or is coated (or partially coated) with a coating of liquid intumescent. The hood may be retained in place with mastic applied to its lower rim.

The downlighter cover illustrated in Figure 8 again comprises a hood 1 which locates over and around a light fitting 10, the fitting 10 being spaced from the internal surfaces of the hood. In this embodiment, only parts of the hood wall and top are lined or coated with an intumescent material.

It will be appreciated that the foregoing is merely exemplary of fire resistant covers in accordance with the invention and that modifications can readily be made thereto without departing from the true scope of the invention as set out in the appended claims.



CLAIMS

1. A fire resistant cover for a ceiling mounted electrical light fitting, the cover comprising a metallic and/or ceramic hood comprising one or more upstanding sides and a top, the hood being coated or lined or partially coated or lined on one or more of its internal surfaces with a liquid based or solid intumescent material, the internal dimensions of the hood being such that the hood can be positioned over and around a light fitting with the light spaced from the internal walls of the hood, and the side(s) and/or top of the hood being formed with a plurality of ventilation openings,
2. A cover as claimed in claim 1 wherein the top and/or side(s) of the hood are formed with one or more apertures through which electrical wiring or the like can pass.
3. A cover as claimed in claim 1 or claim 2 wherein ventilation apertures are formed in the top and/or sides of the hood.
4. A cover as claimed in any one of claims 1 to 3 of which is generally circular or square or rectangular in cross-section.
5. A fire resistant metallic or ceramic cover for a downlighter to be recessed into a suspended ceiling, the cover being coated and/or lined internally at least partially with a liquid based or solid intumescent material and including at least one ventilation aperture through which can pass cabling for connection to the downlighter or a fitting of the downlighter.
6. A cover as claimed in claim 5 wherein the openings in the side(s) of the hood take the form of upstanding slots.

7. A cover as claimed in any one of the preceding claims wherein the hood sides and/or top are produced from a wire mesh.
8. A cover as claimed in any one of the preceding claims wherein the internal surface(s) of the side(s) are lined with one or more pieces of wire mesh or perforated sheet, the exposed surface of the or each piece of mesh or sheet being coated with liquid based intumescent or lined with material impregnated with intumescent.
9. A cover as claimed in any one of the preceding claims wherein the intumescent comprises graphite granules.
10. A fire resistant cover for an electrical fitting to be recessed into a supporting structure, the cover comprising a metallic or ceramic hood coated or lined on one or more of its internal surfaces (or parts of such surfaces) with a liquid based or solid intumescent material and including a top supported by one or more upstanding side walls and a lower radially extending lip for connection to adjoining surfaces of the structure in which the electrical fitting to be covered is located, the top and/or side(s) of the hood being formed with one or more ventilation apertures and through which electrical wiring of the like can pass.

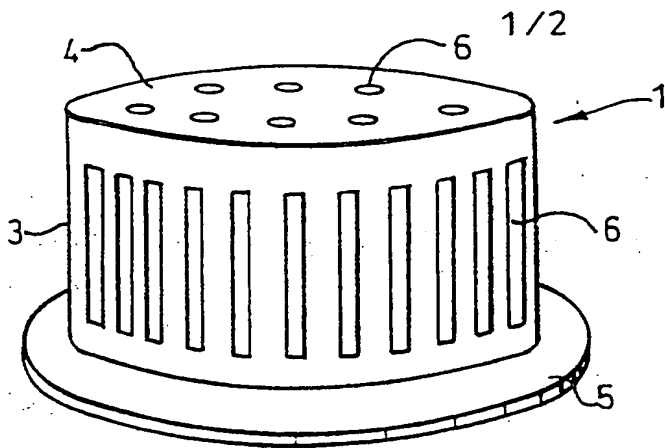


Fig. 1.

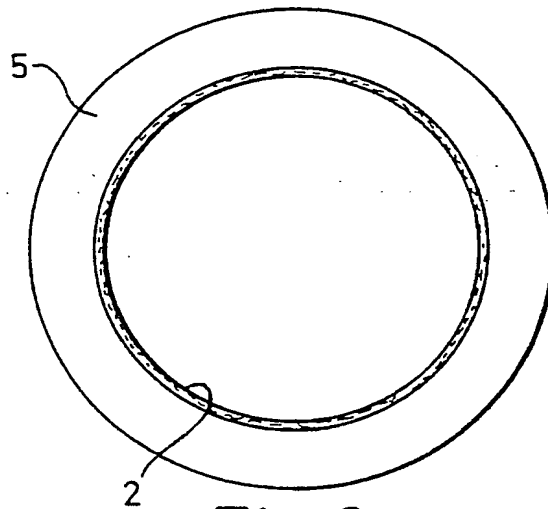


Fig. 2.

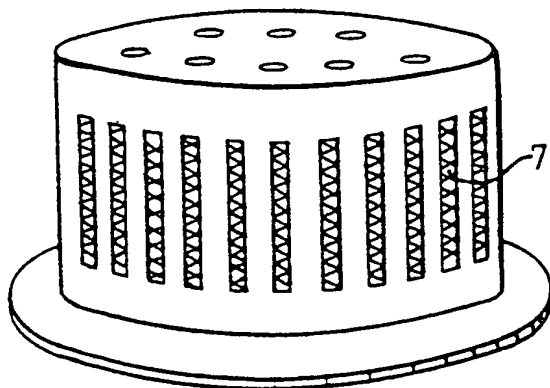


Fig. 3.

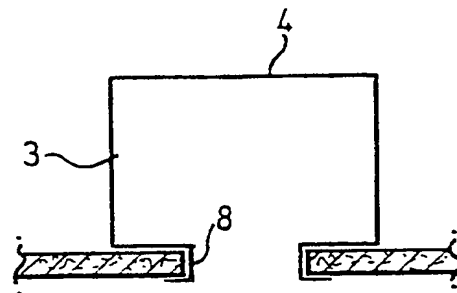


Fig. 4.

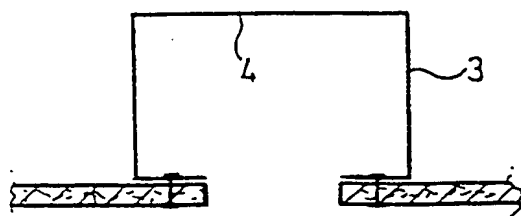
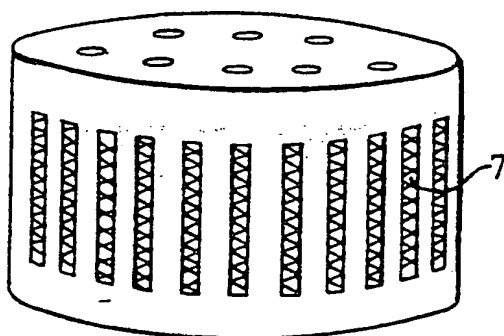
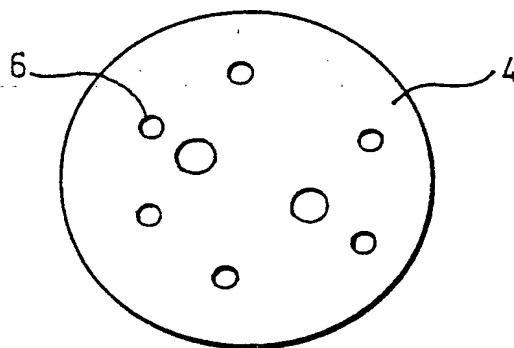
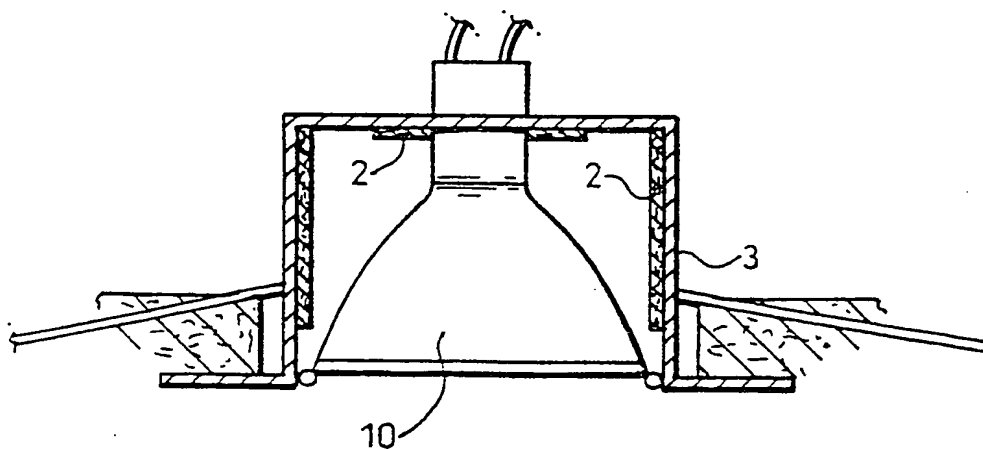


Fig. 5.

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*Fig. 6.**Fig. 7.**Fig. 8.*

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 98/01458

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 F21V25/00 E04B9/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 F21V E04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2 297 609 A (ENVIRONMENTAL SEALS LTD.) 7 August 1996 cited in the application see page 4, line 2 - page 5, line 8 see page 6, line 11 - line 20 see figures 1-5	1-5, 9, 10
Y	GB 2 270 936 A (HAMILTON) 30 March 1994 see page 5, line 25 - line 28	1-5, 9, 10
A	GB 2 234 938 A (ENVIRONMENTAL SEALS LTD.) 20 February 1991 see page 3, line 5 - line 24 see figure 1	1, 7-10
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 235 710 A (ENVIRONMENTAL SEALS LTD.) 13 March 1991 see page 4, line 15 - page 5, line 26 see figures 1,2 -----	1,5,10
A	WO 93 22814 A (B&K SOUTHERN LTD.) 11 November 1993 see page 7, line 17 - page 9, line 16 see page 9, line 33 - page 10, line 20 see figures 1-3 -----	1,5,10

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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